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RARE AND ENDANGERED  
PLANT SPECIES OF PUERTO RICO  
AND THE VIRGIN ISLANDS  
An Annotated Checklist

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WHILE "ENDANGERMENT" implies an immediate or, at the very least, an impending imperilment, rarity can be a very subjective concept. Endangered species are always rare, although the reverse is not invariably true. Also, rarity can be assessed in terms of individuals or populations.

This paper sought to identify those plant species native to Puerto Rico and the Virgin Islands that best fit the criteria of being at present critically rare and endangered. This effort hopes to encourage the systematic monitoring of individual populations and their status, and stimulate formal studies into the biology of these poorly known species by drawing attention to their status.

#### METHODS

An effort was made to review the status of those plant species native to the islands whose survival in the wild was threatened, and identify those specific species that (based on their extreme rarity and/or threatened survival) were most critically endangered.

Active "sensitive species" listings prepared by different institutions concerned with plant conservation for the islands were evaluated and assessed. Numerous plant scientists and technicians with first-hand knowledge on the biology and status of the islands' flora were also consulted. Listings produced by the Puerto Rico Department of Natural Resources and the Environment,<sup>1</sup> and the Center for Plant Conservation<sup>2</sup> were particularly consulted for their updated information on rare and endangered species. Confronted with a wide disparity in criteria and priorities in assessing the rare and endangered com-

TABLE 1 Families Represented by Rare and Endangered Plant Species Known from Three Localities or Fewer for Puerto Rico and the U.S. Virgin Islands

Family	Genera	Species	Family	Genera	Species
Acanthaceae	2	3	Loranthaceae	1	1
Adiantaceae	1	1	Malpighiaceae	2	2
Agavaceae	1	1	Malvaceae	2	2
Araceae	1	1	Melastomataceae	4	7
Arecaceae	1	1	Meliaceae	1	1
Asclepiadaceae	2	3	Myrtaceae	6	17
Aspleniaceae	2	3	Oleaceae	1	1
Bignoniaceae	1	1	Orchidaceae	6	6
Boraginaceae	2	4	Palmaceae	1	1
Bromeliaceae	1	1	Passifloraceae	1	2
Buxaceae	1	2	Piperaceae	1	3
Cactaceae	3	5	Poaceae	2	3
Canellaceae	1	1	Polygalaceae	1	1
Cannaceae	1	1	Polygonaceae	1	3
Capparidaceae	1	1	Polypodiaceae	1	1
Compositaceae	3	6	Portulacaceae	1	1
Convolvulaceae	2	2	Rhamnaceae	1	1
Cucurbitaceae	1	1	Rubiaceae	7	11
Cyatheaceae	1	1	Rutaceae	1	1
Cyperaceae	4	4	Sapotaceae	2	2
Ebenaceae	1	2	Solanaceae	3	5
Ericaceae	2	2	Styracaceae	1	1
Euphorbiaceae	2	3	Theaceae	2	3
Fabaceae	6	8	Thelypteridaceae	1	4
Flacourtiaceae	3	6	Theophrastaceae	1	1
Gesneriaceae	1	1	Thymeliaceae	1	1
Icacinaeae	1	1	Urticaceae	1	3
Juglandaceae	1	1	Verbenaceae	3	3
			Totals	105	152

ponent of the natural flora of Puerto Rico and the Virgin Islands that each of the listings presented, an independent selection was made based on relative endangerment. Relative endangerment was defined in relation to the total number of known localities. The species finally selected were done so based on their being known from a total of three localities or less. After a preliminary listing had been prepared, it was presented to local experts and field-workers who further refined it by incorporating updated distributional data on the species. Nomenclature follows that of Liogier and Martorell.<sup>3</sup>

### RESULTS

A total of 152 species were identified as presently being known from 3 localities or less (see APPENDIX). This total represents 6 percent of the total native flora of the islands. Of the 152 species, 75 percent are endemic to the islands, representing one-third of the total endemic flora.

The 152 species listed represent 105 plant families on the islands. The

TABLE 2 Rare and Endangered Plant Species of Puerto Rico and the U.S. Virgin Islands by Life Form

Life Form	Species (%)
Small trees	53 (35)
Shrubs	29 (18)
Herbs	22 (14)
Trees	16 (11)
Vines	12 (8)
Ferns	9 (6)
Sedges	4 (3)
Succulents	4 (3)
Grasses	3 (2)
Totals	152 (100)

family Myrtaceae is represented by the highest number of species with 17, only one of which is not endemic to the islands. Six families account for 56 species, or better than one-third of the total. These families and their totals of species are: Myrtaceae (17), Rubiaceae (11), Fabaceae (8), Melastomataceae (7), Orchidaceae (6), and Compositae (6), (TABLE 1). Life form of these rare and endangered species is predominately woody and erect. Trees and shrubs make up 64 percent of the total (TABLE 2).

Environmentally, there were no clear tendencies in the distribution of the known localities for the selected species. Climatically, the distribution of localities was quite uniform: dry (30%), moist (36%), wet (34%). Edaphically, the localities occurred predominately on volcanic (44%) and calcareous (42%) substrates, as compared to ultramafic locales (14%). Overall, montane sites accounted for 29% of the localities.

### CONCLUSIONS

In assessing the native flora of Puerto Rico and the Virgin Islands for those species that are rare and endangered, a selection of 152 species was made based on the condition that they are known to occur in three localities or less. Seventy-five percent of these species are endemic to the islands, accounting for one third of the total endemic flora. The selected species were predominately trees and shrubs. Montane sites made up close to one third of the localities, though climatically the total of the localities were distributed evenly on wet, moist, and dry sites. Ultramafic sites made up less than 15 percent of the localities, whereas the remaining 85 percent were distributed almost evenly between volcanic and calcareous sites.

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## REFERENCES

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- 2 CENTER FOR PLANT CONSERVATION. Report on the Rare Plants of Puerto Rico. Missouri Botanical Garden, 1992.
- 3 LIOGIER, A. and G. MARTORELL. *Flora of Puerto Rico and Adjacent Islands: A Systematic Synopsis*. San Juan: Editorial de la Universidad de Puerto Rico. 342 pp., 1982.

## APPENDIX Annotated list of Rare and Endangered Plant Species of Puerto Rico and the U.S. Virgin Islands Known from Three Localities or Fewer

Species	Family	Range	LF/HAB/COM
1 <i>Abutilon commutatum</i>	Malvaceae	PR	SH/d-l/
2 <i>Adiantum vivesii</i>	Adiantaceae	PR	F/m-l/terrestrial in humus and deep shade
3 <i>Agave eggersiana</i>	Agavaceae	VI	SU/d.m-l/v/
4 <i>Alsophila brooksii</i>	Cyatheaceae	PR/Cub/Hisp	F/m.w-s/ montane
5 <i>Antirhea portoricensis</i>	Rubiaceae	PR	T/m-l/valuable wood
6 <i>Antirhea sintenisii</i>	Rubiaceae	PR	T/m-l/valuable wood
7 <i>Aristida chaseae</i>	Poaceae	PR	G/d-l,s/
8 <i>Aristida portoricensis</i>	Poaceae	PR	G/m.d-s/
9 <i>Auerodendron pauciflorum</i>	Rhamnaceae	PR	ST/m-l/1 site
10 <i>Banara portoricensis</i>	Flacourtiaceae	PR	ST/w-v/upper montane
11 <i>Banara vanderbiltii</i>	Flacourtiaceae	PR	ST/m-l/
12 <i>Basiphyllaea augustifolia</i>	Orchidaceae	PR/Cub/Hisp	H/w-v/montane
13 <i>Brachionidium ciliolatum</i>	Orchidaceae	PR	H/w-v/upper montane
14 <i>Brunfelsia portoricensis</i>	Solanaceae	PR	SH/w-v/montane
15 <i>Bulbostylis curassavica</i>	Cyperaceae	PR/GA/LA	S/d-l/coastal
16 <i>Buncbosia nitida</i>	Malpighiaceae	PR/VI/Hisp/LA	ST/w-v/montane
17 <i>Buxus portoricensis</i>	Buxaceae	PR	ST/m-l,s/
18 <i>Buxus vahlII</i>	Buxaceae	PR	ST/m-l/
19 <i>Caesalpinia culebrae</i>	Fabaceae	PR	V/d-l,v/littoral
20 <i>Caesalpinia monensis</i>	Fabaceae	PR	V/d-l/coastal on Mona Island
21 <i>Caesalpinia portoricensis</i>	Fabaceae	PR	V/d-l/'vicinity of Guanica'
22 <i>Callicarpa ampla</i>	Verbenaceae	PR	ST/w-v/montane
23 <i>Calypttranthes estremerae</i>	Myrtaceae	PR	ST/m-l/
24 <i>Calypttranthes peduncularis</i>	Myrtaceae	PR	ST/w-s/montane
25 <i>Calypttranthes thomasiana</i>	Myrtaceae	PR, VI	ST/m-l,v/
26 <i>Calypttranthes triflorum</i>	Myrtaceae	PR	ST/w-s/montane
27 <i>Calyptronoma rivalis</i>	Arecaceae	PR	T/m-l,v/
28 <i>Canna pertusa</i>	Cannaceae	PR	SH/m.w-v/riverine forests
29 <i>Cassia mirabilis</i>	Fabaceae	PR	SH/m-v/white sands
30 <i>Catesbaea melanocarpa</i>	Rubiaceae	PR/VI/LA	ST/d-l/
31 <i>Chamaesyce orbifolia</i>	Euphorbiaceae	PR	H/d-l/Mona Is.
32 <i>Chione seminervis</i>	Rubiaceae	PR/Hisp	ST/w-v/montane
33 <i>Chrysophyllum bicolor</i>	Sapotaceae	PR/VI/Hisp	ST/m-v/
34 <i>Clidemia domingensis</i>	Melastomataceae	PR/Hisp/LA	ST/m-l,v/
35 <i>Clidemia polystachya</i>	Melastomataceae	PR	ST/?/only type specimen
36 <i>Clidemia portoricensis</i>	Melastomataceae	PR	SH/w-l/

(continued)

## APPENDIX (continued)

Species	Family	Range	LF/HAB/COM
37 <i>Coccoloba pallida</i>	Polygonaceae	PR	ST/m-l/l locale
38 <i>Coccoloba rugosa</i>	Polygonaceae	PR	T/m.w-v/
39 <i>Coccoloba tenuifolia</i>	Polygonaceae	PR/Bh/Cub/Jam	ST/m-l/
40 <i>Conostegia botteana</i>	Melastomataceae	PR/Hisp	SH/w-v/montane
41 <i>Cordia bellonis</i>	Boraginaceae	PR	SH/w-s,l/
42 <i>Cordia rupicola</i>	Boraginaceae	PR, BVI	ST/d-l/
43 <i>Cordia wagnerorum</i>	Boraginaceae	PR	SH/w-v/montane
44 <i>Cornutia obovata</i>	Verbenaceae	PR	ST/m-l,v/
45 <i>Crescentia portoricensis</i>	Bignoniaceae	PR	ST/m.w-s/
46 <i>Croton impressus</i>	Euphorbiaceae	PR/Hisp	SH/w-s/
47 <i>Croton nummularifolius</i>	Euphorbiaceae	PR/Cub/Hisp	SH/d-l/
48 <i>Cynanchum monense</i>	Asclepiadaceae	PR	V/d-l/Mona Is.
49 <i>Cyperus urbanii</i>	Cyperaceae	PR	S/m.w-v,d-l/
50 <i>Dalea carthagensis</i> var. <i>portoricana</i>	Fabaceae	PR	SH/d-l/
51 <i>Daphnopsis belleriana</i>	Thymeleaceae	PR	ST/m-l/
52 <i>Dendropemon sintenisii</i>	Loranthaceae	PR	H/m-v/only type specimen known
53 <i>Dicliptera krugii</i>	Acanthaceae	PR	H/m.w-v/montane
54 <i>Diospyros revoluta</i>	Ebenaceae	PR/Hisp/LA	T/m.w-v,s/valuable wood
55 <i>Diospyros sintenisii</i>	Ebenaceae	PR	T/m-l/valuable wood
56 <i>Dracontium polyphyllum</i>	Araceae	PR/Hisp/Guia	H/w-v,l/single-leafed aroid
57 <i>Elaphoglossum serpens</i>	Polypodiaceae	PR	F/w-v/upper montane
58 <i>Encyclia krugii</i>	Orchidaceae	PR	H/w-v/upper montane
59 <i>Epidendrum kraenzlinii</i>	Orchidaceae	PR	H/m-l,s/won mossy rocks
60 <i>Erythrina eggersii</i>	Fabaceae	PR, VI	ST/d,m-l/
61 <i>Eugenia bellonis</i>	Myrtaceae	PR	ST/d-v/l known individual
62 <i>Eugenia boqueronensis</i>	Myrtaceae	PR	ST/d-l/
63 <i>Eugenia glabrata</i>	Myrtaceae	PR/GA	ST/d-l,w-s/
64 <i>Eugenia haematocarpa</i>	Myrtaceae	PR	ST/w-v/montane
65 <i>Eugenia margaritae</i>	Myrtaceae	PR	ST/w-v/upper montane
66 <i>Eugenia serrasuella</i>	Myrtaceae	PR	ST/m-v/
67 <i>Eugenia underwoodii</i>	Myrtaceae	PR	ST/m-l/
68 <i>Eugenia woodburyana</i>	Myrtaceae	PR	ST/d-l,s/
69 <i>Eupatorium borinquense</i>	Compositae	PR	SH/m-l/
70 <i>Eupatorium droserolepis</i>	Compositae	PR	SH/w-v/montane
71 <i>Eupatorium oteroi</i>	Compositae	PR	SH/d,m-l/
72 <i>Forchhammeria polystachya</i>	Capparidaceae	PR/Hisp	ST/m-l/l locale
73 <i>Galactia eggersii</i>	Fabaceae	VI/BVI	V/m-v/
74 <i>Gesneria pauciflora</i>	Gesneriaceae	PR	H/w-s/montane
75 <i>Goetzia elegans</i>	Solanaceae	PR	ST/m-l
76 <i>Gonocalyx concolor</i>	Ericaceae	PR	ST/w-v/montane
77 <i>Habernaria dussii</i>	Orchidaceae	PR/LA	H/w-v/upper montane
78 <i>Harrisia portoricensis</i>	Cactaceae	PR	SU/d-l,v/
79 <i>Heliotropium guanicense</i>	Boraginaceae	PR	SH/d-l/littoral
80 <i>Henriettea membranifolia</i>	Melastomataceae	PR	ST/m-l/
81 <i>Ipomoea krugii</i>	Convolvulaceae	PR	V/m-s/
82 <i>Jacquinia umbellata</i>	Theophrastaceae	PR/Hisp	SH/d-l,s/
83 <i>Juglans jamaicensis</i>	Juglandaceae	PR/Cub/Hisp	T/w-v/montane
84 <i>Justicia borinquensis</i>	Acanthaceae	PR	H/w-v/montane
85 <i>Justicia culebritae</i>	Acanthaceae	PR/BVI	H/d-v/

(continued)

## APPENDIX (continued)

Species	Family	Range	LF/HAB/COM
86 <i>Lantana strigosa</i>	Verbenaceae	PR/Cub	SH/d-l/littoral
87 <i>Laplacea portoricensis</i>	Theaceae	PR/Hisp	T/w-v/montane
88 <i>Lepantbes eltorensis</i>	Orchidaceae	PR	H/w-v/montane
89 <i>Leptocereus quadricostatus</i>	Cactaceae	PR	ST/d-l/
90 <i>Leptocereus gratianus</i>	Cactaceae	PR	ST/d-l,v/
91 <i>Lunania ekmanii</i>	Flacourtiaceae	PR/Hisp	ST/w-v,s/montane
92 <i>Lyonia truncata</i> var. <i>proctorii</i>	Ericaceae	PR	SH/d-v/1 locale
93 <i>Machagonia woodburyana</i>	Rubiaceae	VI	ST/d-v/
94 <i>Malpighia setosa</i>	Malpighiaceae	PR/Hisp	SH/d-l/
95 <i>Mappia racemosa</i>	Icacinaceae	PR/GA/CA	ST/m-l/
96 <i>Mariscus urbanii</i>	Cyperaceae	PR	S/m,w-v/montane
97 <i>Martiera sintensisii</i>	Myrtaceae	PR	ST/w-v/montane
98 <i>Marsdenia elliptica</i>	Asclepiadaceae	PR	V/w-v/montane
99 <i>Mikania stevensiana</i>	Compositae	PR	V/w-s/montane
100 <i>Mitracarpus maxwelliae</i>	Rubiaceae	PR	SH/d-l/1 locale
101 <i>Mitracarpus polycladus</i>	Rubiaceae	PR/LA	SH/d-l/2 populations
102 <i>Myrcia paganii</i>	Myrtaceae	PR	ST/m-l/
103 <i>Myrcia maricaoensis</i>	Myrtaceae	PR	ST/w-s/montane
104 <i>Myrciaria borinquena</i>	Myrtaceae	PR	T/d-l,v/
105 <i>Operculina triquetra</i>	Convolvulaceae	VI	V/d-l/
106 <i>Opuntia borinquensis</i>	Cactaceae	PR	SU/d-l,v/
107 <i>Opuntia triacantha</i>	Cactaceae	PR/FL/VI/LA	SU/d-l,v/
108 <i>Ossaea krugiana</i>	Melastomataceae	PR	ST/w-v/montane
109 <i>Ossaea scabrosa</i>	Melastomataceae	PR/GA	SH/w-v/montane
110 <i>Ottoschulzia rhodoxylon</i>	Icacinaceae	PR/Hisp	ST/m-l/
111 <i>Panicum stevensianum</i>	Poaceae	PR/Cub	G/m-v/white sands
112 <i>Passiflora bilobata</i>	Passifloraceae	PR/Hisp	V/d-l/
113 <i>Passiflora murucuja</i>	Passifloraceae	PR/Hisp	V/d-l/
114 <i>Peperomia megalopoda</i>	Piperaceae	PR	H/m,w-v/montane
115 <i>Peperomia myrsifolia</i>	Piperaceae	PR/VI/BVI/LA	H/d-v/
116 <i>Peperomia wheeleri</i>	Piperaceae	PR	H/
117 <i>Phialanthus grandifolius</i>	Rubiaceae	PR	SH/w-s/montane
118 <i>Phialanthus myrtilloides</i>	Rubiaceae	PR/Bh/Cub/Jam	SH/w-s/montane
119 <i>Pilea leptophylla</i>	Urticaceae	PR	H/m-v/
120 <i>Pilea multicaulis</i>	Urticaceae	PR	H/w-v/montane
121 <i>Pilea richardii</i>	Urticaceae	PR/VI	H/d-l,v/
122 <i>Pleodendrum macranthum</i>	Canellaceae	PR	ST/m,w-l,v/montane
123 <i>Polygala becatantha</i>	Polygalaceae	PR/GA/LA	H/d-l/
124 <i>Polystichum calderonensis</i>	Aspleniaceae	PR	F/w-v/montane
125 <i>Portulaca caulerpoides</i>	Portulacaceae	PR	H/d-l/
126 <i>Pouteria botteana</i>	Sapotaceae	PR/Cub/Hisp	ST/m,w-v/
127 <i>Pseudopboenix sargentii</i> ssp. <i>saona</i>	Palmaceae	PR/Hisp	ST/d-l/
128 <i>Psidium sintensisii</i>	Myrtaceae	PR	T/m-v/montane
129 <i>Psiguria trifoliata</i>	Cucurbitaceae	PR	V/m-v/
130 <i>Randia portoricensis</i>	Rubiaceae	PR	ST/d-l/
131 <i>Schoepfia arenaria</i>	Olacaceae	PR	T/m,w-v/montane
132 <i>Scleria doradoensis</i>	Cyperaceae	PR	S/m-v/white sands
133 <i>Sida eggersii</i>	Malvaceae	PR/BVI	ST/d-l/
134 <i>Solanum conocarpum</i>	Solanaceae	VI	SH/d-v/
135 <i>Solanum mucronatum</i>	Solanaceae	PR/VI	SH/m-v/
136 <i>Solanum woodburyii</i>	Solanaceae	PR	SH/w-v/montane
137 <i>Stabilia monosperma</i>	Fabaceae	PR/Hisp	ST/d-l/
138 <i>Styrax portoricensis</i>	Styracaceae	PR	T/w-v/montane

(continued)

## APPENDIX (continued)

Species	Family	Range	LF/HAB/COM
139 <i>Tectaria estremarana</i>	Aspleniaceae	PR	F/m-l/l locale
140 <i>Ternstroemia luquillensis</i>	Theaceae	PR	T/w-v/montane
141 <i>Ternstroemia subsessilis</i>	Theaceae	PR	T/w-v/montane
142 <i>Thelypteris hastata</i> var. <i>heterodoxa</i>	Thelypteridaceae	PR	F/m-l,w-s/
142 <i>Thelypteris inabonensis</i>	Thelypteridaceae	PR	F/w-v/l locale
143 <i>Thelypteris verecunda</i>	Thelypteridaceae	PR	F/m-l/
144 <i>Thelypteris yaucoensis</i>	Thelypteridaceae	PR	F/m-l,v/
145 <i>Tillandsia lineatispica</i>	Bromeliaceae	PR/VI	H/m-v/
146 <i>Trichilia triacantha</i>	Meliaceae	PR	ST/d,m-l,s/
147 <i>Vernonia borinquensis</i>	Compositae	PR	SH/m-v/
148 <i>Vernonia proctori</i>	Compositae	PR	SH/d-v/l locale
149 <i>Xylosma pachyphyllum</i>	Flacourtiaceae	PR	T/w-s/montane
150 <i>Xylosma schaefferioides</i>	Flacourtiaceae	PR/GA	T/w-s/montane
151 <i>Xylosma schwaneckeanum</i>	Flacourtiaceae	PR	ST/w-v/montane
152 <i>Zanthoxylum</i> <i>tbomasianum</i>	Rutaceae	PR/VI	ST/d,m-v/

Abbreviations: Range: PR (Puerto Rico), Cub (Cuba), Hisp (Hispaniola), Jam (Jamaica), GA (Greater Antilles), LA (Lesser Antilles), CA (Central America), Bh (Bahamas), Guia (Guiana), VI (Virgin Islands), BVI (British Virgin Islands); LF (life form): G (grass), F (fern), H (herb), S (sedge), SH (shrub), ST (small tree), SU (succulent), T (tree), V (vine); HAB (habitat): d (dry), m (moist), w (wet) - l (limestone), v (volcanic), s (serpentine); COM (Comments). Species nomenclature follows that of Liogier and Martorell (1982).<sup>3</sup>